REMARKS

Reconsideration of the pending application is respectfully requested on the basis of the following particulars.

1. Rejection of claims 15-21 and 23-30 under 35 U.S.C. § 103(a) as being unpatentable over U.S. patent no. 6,169,809 (*Azima et al.*) (the *'809* patent) in view of U.S. patent no. 5,663,894 (*Seth et al.*)

Reconsideration of this rejection is respectfully requested on the basis that the rejection fails to establish a *prima facie* case of obviousness with respect to claims 15-21 and 23-30.

A. The cited references do not disclose or suggest every claimed limitation

Reconsideration of this rejection is respectfully requested on the basis that the rejection fails to establish a *prima facie* case of obviousness with respect to claims 15-21 and 23-30 because the cited patents fail to disclose or suggest every limitation of pending claim 15.

Neither the *'809* nor the *Seth* patents disclose a transducer for reproducing sound, including a generally circular piezoelectric element having two radial surfaces wherein an entirety of one radial surface is directly glued onto a membrane composed of a plurality of layers, of which at least one layer is made of a polymer, wherein the membrane is not round and lacks symmetry over 360 degrees in relation to the shape of the piezoelectric element, as required by pending claim 15.

With respect to the *'809* patent, a loudspeaker 81 is disclosed that includes a transducer 9 mounted on a panel 2. In viewing Figs. 1 and 3 of the *'809* patent, the transducer is apparently a circular disk shaped transducer. The Office action, on page 2, refers to the transducer 9 as a "generally circular piezoelectric element (9)."

The transducer of the *'809* patent, however, is not a piezoelectric transducer. Instead, the transducer 9 is disclosed as being of the type disclosed in co-pending patent application serial nos. 09/011,773, and 09/011,831, which issued respectively as U.S. patent nos. 6,192,136, (the *'136* patent) and 6,151,402 (the *'402* patent), both to *Azima et al.* (the *'809* patent, col. 2, lines 46-50).

Looking to the *'136* and the *'402* patents, an inertial vibration transducer 9 is disclosed. As can be seen from the figures and the disclosures of the *'136* and the *'402* patents, an inertial vibration transducer includes a coil 13, a pair of opposed magnets 15, and a pole forming member 14. Thus, the transducers of the *'809*, *'136*, and the *'402* patents are all electromotive arrangements that require a complex structure of coils, poles, and magnets in order to provide a motion in response to electricity passing through the coils.

Such inertial vibration transducers are not piezoelectric elements, as asserted by the Office action, since a piezoelectric element does not require a complex arrangement of coils, poles, and magnets in order to provide a motion in response to voltage, but instead, the material of the piezoelectric element itself changes in dimension in response to an externally applied voltage.

Additionally, as acknowledged in the Office action on pages 2-3, the *'809* patent fails to disclose how the transducer 9 is attached to the panel 2.

Thus, the *'809* patent fails to disclose a generally circular piezoelectric element having two radial surfaces wherein an entirety of one radial surface is directly glued onto a membrane composed of a plurality of layers, as required by pending claim 15.

The Office action relies on the *Seth* patent to provide for the deficiencies of the *'809* patent (Office action, page 3). However, the *Seth* patent also fails to disclose a generally circular piezoelectric element having two radial surfaces wherein an entirety of one radial surface is directly glued onto a membrane composed of a plurality of layers, of which at least one layer is made of a polymer, wherein the membrane is not round and lacks symmetry over 360 degrees in relation to the shape of the piezoelectric element, as required by pending claim 15.

The *Seth* patent discloses a system and method for machining process characterization by utilizing passive sensors to detect the vibration of a machine element upon impact from a calibrated input (abstract; col. 3, lines 46-49; col. 9, lines 21-26). Passive sensors such as piezoelectric accelerometers, both compression type and shear type accelerometers may be utilized (col. 5, lines 15-17).

While these accelerometers include a piezoelectric element, there is no disclosure in the *Seth* patent that the piezoelectric element has two radial surfaces, as required by pending claim 15.

Further, while these accelerometers include a piezoelectric element, they also include additional structure including a small seismic mass connected to the piezoelectric element in order to measure the relative motion between the accelerometer and the machine element to which it is attached (col. 5, lines 27-29; see also U.S. patent no. 5,661,361 (*Lysen*)).

Thus, due to the configuration of piezoelectric accelerometers, the *Seth* patent fails to disclose a generally circular piezoelectric element having two radial surfaces wherein an entirety of one radial surface is directly glued onto a membrane, as required by pending claim 15. Instead, even if the piezoelectric element had two radial surfaces, due to the structure required to support a seismic mass and the associated circuitry of the accelerometer, the radial surface of the piezoelectric element is not directly glued onto a membrane as required by pending claim 15.

Further, there is no disclosure in the *Seth* patent that the accelerometers are attached to a membrane composed of a plurality of layers, of which at least one layer is made of a polymer. Instead, the accelerometers are attached to machine structures and elements.

While the *Seth* patent does disclose mounting the accelerometers utilizing a hard glue or epoxy, the piezoelectric element itself is not mounted to the machine structure, but rather, the entire accelerometer is mounted to the machine structure. Thus, the *Seth* patent fails to disclose a generally circular piezoelectric element having two radial surfaces wherein an entirety of one radial surface is directly glued onto a membrane composed of a plurality of layers, of which at least one layer is made of a polymer, wherein the membrane is not round and lacks symmetry over 360 degrees in relation to the shape of the piezoelectric element, as required by pending claim 15.

Since neither the *'809* nor the *Seth* patents disclose a transducer for reproducing sound, including a generally circular piezoelectric element having two radial surfaces wherein an entirety of one radial surface is directly glued onto a membrane composed of a plurality of layers, of which at least one layer is made of a polymer, wherein the membrane is not round and lacks symmetry over 360 degrees in relation to the shape of the piezoelectric element, as required by pending claim 15, the proposed combination of the *'809* and the *Seth* patents must also fail to disclose these features.

Accordingly, since neither the *'809* nor the *Seth* patents disclose every feature of pending claim 15, a *prima facie* case of obviousness cannot be maintained and withdrawal of this rejection is respectfully requested.

B. There is no motivation to combine the cited references

Reconsideration of this rejection is respectfully requested on the basis that the rejection fails to establish a *prima facie* case of obviousness with respect to claims 15-21 and 23-30 because there is no suggestion or motivation to combine the cited references.

As discussed above, the *'809* patent relates to a loudspeaker wherein an inertial vibration transducer provides active motion to a panel, in response to an electrical input, in order to produce sound waves from the induced vibration of the panel. In contrast, as also discussed above, the *Seth* patent relates to the use of passive accelerometers to measure the vibration induced in machine element through a calibrated impact.

Since the accelerometers of the *Seth* patent are passive, they only measure vibration in response to an impact and do not provide active motion to the machine element. The circuitry and inertial mass associated with each accelerometer prevents the use of an accelerometer as an active transducer.

Thus, a skilled artisan would not have been motivated to provide the accelerometers of the *Seth* patent to the loudspeaker of the *'809* patent, since the accelerometers function in an entirely different manner from the inertial vibration transducers of the *'809* patent.

Thus, because a skilled artisan would not have been motivated to combine the cited patents, a *prima facie* case of obviousness cannot be maintained, and withdrawal of this rejection is respectfully requested.

C. There is no reasonable expectation of success

Reconsideration of this rejection is respectfully requested on the basis that the rejection fails to establish a *prima facie* case of obviousness with respect to claims 15-21 and 23-30 because there is no reasonable expectation of successfully combining the cited references.

As discussed above, the accelerometers of the *Seth* patent are not capable of acting as an active transducer. Thus, even if the accelerometers of the *Seth* patent were added to the loudspeaker of the *'809* patent in place of the inertial vibration transducers, there is no reasonable expectation of successfully producing a loudspeaker, since the accelerometers of the *Seth* patent cannot provide the active motion necessary to vibrate the panel in order to produce sound waves. Thus, the function of the loudspeaker of the *'809* patent would be destroyed by such a combination.

Further, as also discussed above, since neither the *'809* nor the *Seth* patents disclose every feature of pending claim 15, there is no reasonable expectation that the combination will successfully disclose every feature of pending claim 15.

Accordingly, since there is no reasonable expectation of successfully combining the *'809* and the *Seth* patents, a *prima facie* case of obviousness cannot be maintained and withdrawal of this rejection is respectfully requested.

2. Conclusion

In view of the foregoing remarks, it is respectfully submitted that the application is in condition for allowance. Accordingly, it is respectfully requested that every pending claim in the present application be allowed and the application be passed to issue.

If any issues remain that may be resolved by a telephone or facsimile communication with the applicant's attorney, the examiner is invited to contact the undersigned at the numbers shown below.

BACON & THOMAS, PLLC
625 Slaters Lane, Fourth Floor
Alexandria, Virginia 22314-1176
Phone: (703) 683-0500
Facsimile: (703) 683-1080

Date: June 12, 2007

Respectfully submitted,

Cassell

JUSTIN J. CASSELL
Attorney for Applicant
Registration No. 46,205